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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,590	11/07/2001	Thomas W. Smith	D/A1503	4094
1590 01/28/2004				
Patent Documentation Center Xerox Corporation Xerox Square 20th Floor 100 Clinton Ave. S. Rochester, NY 14644				
EXAMINER SHOSHO, CALLIE E.				
ART UNIT PAPER NUMBER 1714				

DATE MAILED: 01/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/036,590

Applicant(s)

SMITH ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is set above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. All outstanding rejections except for those described below are overcome by applicants' amendment filed 11/21/03.

The following action is non-final in light of the use of new references against the present claims, namely, Bergthaller et al. (U.S. 5,855,657) or Ma et al. (U.S. 6,432,523).

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-8, 11-20, and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gundlach et al. (U.S. 6,054,505) in view of Vieira et al. (U.S. 5,686,633).

The rejection is adequately set forth in paragraph 5 of the office action mailed 8/14/03 and is incorporated here by reference.

With respect to newly added claims 22-25, it is noted that Gundlach et al. disclose polyquaternary amine compounds including polydimethyldiallyl ammonium chloride as well as Acid dyes including Acid Red 52, Acid Yellow 23, and Acid Blue 9 (col.8, lines 26-67, col.14, lines 26 and 40-41, and col.8, line 21).

4. Claims 1-7, 11-20, and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gundlach et al. (U.S. 6,054,505) in view of Yokoyama et al. (U.S. 4,256,493).

The rejection is adequately set forth in paragraph 6 of the office action mailed 8/14/03 and is incorporated here by reference.

With respect to newly added claims 22-25, it is noted that Gundlach et al. disclose polyquaternary amine compounds including polydimethyldiallyl ammonium chloride as well as Acid dyes including Acid Red 52, Acid Yellow 23, and Acid Blue 9 (col.8, lines 26-67, col.14, lines 26 and 40-41, and col.15, line 21).

5. Claims 1-4 and 10-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Gundlach et al. (U.S. 6,054,505) in view of either Bergthaller et al. (U.S. 5,855,657) or Ma et al. (U.S. 6,432,523).

Gundlach et al. disclose ink comprising water, 0.1-40% nonpolymeric salt, 1-5% anionic dye including Acid Red 52, Acid Yellow 23, and Acid Blue 9, and polyquaternary amine such as polydiallyl dimethyl ammonium, polyquaternized polyvinylamine, polyquaternized polyallylamine, epichlorohydrin/amine, cationic amido amine, and copolymer of vinyl pyrrolidone and vinyl imidazolium. It is further disclosed that the above ink is preferably printed using thermal ink jet printer but Gundlach et al. also disclose the use of other conventionally known ink jet printing methods including acoustic ink jet printing and piezoelectric ink jet process (col.1, lines 41-43 and 44-47, col.2, line 46-col.3, line 3, col.6, lines 62-65, col.7, lines 25-27 and 40-55, col.13, lines 31-32, col.14, lines 26 and 40-41, col.15, lines 21 and 42-45, col.19, lines 51-58, col.22, lines 35-38, and col.23, lines 18-24).

The difference between Gundlach et al. and the present claimed invention is the requirement in the claims of (a) anionic lightfastness-imparting agent and (b) the number of

cationic sites on the polyquaternary amine per one anionic site on the dye or the number of cationic sites on the polyquaternary amine per one anionic site on the lightfastness imparting agent.

With respect to difference (a), Berghaller et al., which is drawn to ink jet ink containing dyes including anionic dyes such as Acid dyes, disclose the use of 0.2-8% thiosulfate, trithionate, or tetrathionate salts in order to produce ink with improved color fastness (col.1, lines 34-41 and col.5, line 40).

Alternatively, Ma et al., which is drawn to ink jet inks, disclose the use of 1-8% thiosulfate salt in order to improve lightfastness (col.5, lines 63-66).

In light of the motivation for using anionic lightfastness agent disclosed by either Berghaller et al. or Ma et al., it therefore would have been obvious to one of ordinary skill in the art to use such lightfastness agent in the ink of Gundlach et al. in order to produce ink with improved color fastness or lightfastness, and thereby arrive at the claimed invention.

With respect to difference (b), it is noted that Gundlach et al. disclose that the number of cationic sites on the polyquaternary amine compound must be larger than the number of anionic sites on the dye in order to avoid the polymer form precipitating, however, there is no explicit disclosure of the number of cationic sites on the polyquaternary amine per one anionic site on the dye or the number of cationic sites on the polyquaternary amine per one anionic site on the lightfastness imparting agent.

However, given that Gundlach et al. disclose that the number of cationic groups should be larger than the number of anionic groups in order to avoid precipitation, it would have been obvious to one of ordinary skill in the art to control the number of cationic sites on the

polyquaternary amine per one anionic site on the dye or per one anionic site on the lightfastness imparting agent to values, including that presently claimed, in order to prevent precipitation and to produce an ink with excellent shelf stability, and thereby arrive at the claimed invention.

Response to Arguments

6. Applicants' arguments filed 11/21/03 have been fully considered but they are not persuasive.

Specifically, applicants argue that:

(a) there is no disclosure of lightfastness agent in Gundlach et al. or any disclosure in Gundlach et al., Vieira et al., or Yokoyama et al. of complex between anionic dye, anionic lightfastness agent, and polyquaternary amine compound as required in the present claims.

(b) There is no motivation to combine Gundlach et al., which disclose anionic dye and polyquaternary amine compound, with either Vieira et al. or Yokoyama et al. which each disclose anionic lightfastness agent.

(c) There is no disclosure in either Vieira et al. or Yokoyama et al. of polyquaternary amine compound.

(d) The only motivation to combine the references of record is hindsight.

With respect to argument (a), it is agreed that there is no disclosure of anionic lightfastness agent in Gundlach et al. which is why Gundlach et al., which is drawn to ink jet ink, is combined with either Vieira et al. or Yokoyama et al., which are each also drawn to ink jet

inks, and which each disclose the use of anionic lightfastness agent identical to that presently claimed.

Gundlach et al. disclose ink jet ink comprising water, non-polymeric salt, anionic dye, and polyquaternary amine compound, but there is no disclosure of anionic lightfastness agent. Vieira et al. and Yokoyama et al. each disclose ink jet ink comprising dye, including anionic dye, and anionic lightfastness agent. Although there is no disclosure in either Gundlach et al., Vieira et al., or Yokoyama et al. that the polyquaternary amine, anionic dye, and anionic lightfastness agent form a complex, given that Gundlach et al. disclose that upon mixing the anionic dye and polyquaternary amine compound form a complex and given that the combination of either Gundlach et al. and Vieira et al. or Gundlach et al. and Yokoyama et al. disclose anionic dye, polyquaternary amine, and anionic lightfastness agent identical to that presently claimed, it is clear that these three ingredients would intrinsically form a complex as required in the present claims.

With respect to argument (b), it is the examiner's position that there is motivation to combine Gundlach et al. with either Vieira et al. or Yokoyama et al.

Gundlach et al. is drawn to ink jet ink and disclose ink comprising anionic dye and polyquaternary amine. Both Vieira et al. and Yokoyama et al. are each also drawn to ink jet inks that comprise anionic dye such as those utilized in Gundlach et al., i.e. Acid dyes, and each provide motivation for using anionic lightfastness agent, i.e. to produce stable ink that will not fade or discolor (Vieira et al.) or to produce ink with good resistance to light that will not clog the printer nozzles (Yokoyama et al.). Thus, given that either Vieira et al. or Yokoyama et al. is

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drawn to same field of endeavor as Gundlach et al. and given that each of Vieira et al. and Yokoyama et al. disclose motivation for using anionic lightfastness agent, it is the examiner's position that there is proper motivation to combine either Gundlach et al. and Vieira et al. or Gundlach et al. and Yokoyama et al.

It is noted that the present specification comprises comparative data (page 45) wherein ink within the scope of the present claims, i.e. comprising anionic lightfastness agent, is compared with ink outside the scope of the present claims, i.e. comprising no anionic lightfastness agent. It is shown that the ink of the present invention is superior in terms of lightfastness. However, the data does not establish unexpected or surprising results over the cited prior art given that Vieira et al. and Yokoyama et al. each already disclose the criticality of using anionic lightfastness agents to produce ink that will not fade and that possesses good resistance to light.

Applicants also argue that there is no disclosure in either Gundlach et al. and Vieira et al. or Gundlach et al. and Yokoyama et al. of the number of cationic sites on the polyquaternary amine for every one anionic site on the lightfastness agent or for every one anionic site on the anionic dye.

It is agreed that there is no explicit disclosure in the cited prior art of the number of cationic sites on the polyquaternary amine for every one anionic site on the lightfastness agent or for every one anionic site on the anionic dye in the cited prior art.

However, it is noted that Gundlach et al. disclose that the number of cationic sites on the polyquaternary amine compound must be larger than the number of anionic sites on the dye in order to avoid the polymer from precipitating. Thus, given that Gundlach et al. disclose that the

number of cationic groups should be larger than the number of anionic groups in order to avoid precipitation, it would have been obvious to one of ordinary skill in the art, absent evidence to the contrary, to control the number of cationic sites on the polyquaternary amine per one anionic site on the dye or per one anionic site on the lightfastness imparting agent to values, including that presently claimed, in order to prevent precipitation and to produce an ink with excellent shelf stability, and thereby arrive at the claimed invention.

With respect to argument (c), while there is no disclosure in either Vieira et al. or Yokoyama et al. of polyquaternary amine compound, note that either Vieira et al. or Yokoyama et al. is used as teaching reference, and therefore, it is not necessary for these secondary references to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather these references teach a certain concept, namely the use of anionic lightfastness agents, i.e. UV absorbers, in ink jet inks, and in combination with the primary reference, disclose the presently claimed invention.


With respect to argument (d), in response to applicants' argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge

gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Thus, it is the examiner's position that the combination of either Gundlach et al. and Vieira et al. or Gundlach et al. and Yokoyama et al. is not based on hindsight but rather based on the fact that each reference is drawn to ink jet inks and given that there is proper motivation for combining either Vieira et al. or Yokoyama et al. with Gundlach et al.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.


Callie E. Shosho
Primary Examiner
Art Unit 1714